Notebook, N-03-00-00.3

This notebook covers the period 1903-1904. The book contains notes, primarily by Edison, regarding experiments to stop the action of the potassium hydroxide solution on the components of Edison's storage battery. Included is a list, drawn from chemical reference texts, of compounds that are not acted upon by alkaline solutions. The inside front cover is inscribed "1903-04 Experiments on Foaming of KOH in Battery Witness Ludwig F. Ott." An entry on the first page indicates that the work was done at Edison's laboratory at Fort Myers, Florida. Inserted into the book is a one-page note regarding tests on the "foaming" of battery solutions. The pages are unnumbered. Approximately 40 pages have been used.

X E-172
N-(03-00-00) T.A.E.

1903-04 Experiments on Foaming of KOH in Battery.

Andrew Lindsay 7/1/04

Substances not altered by alkalis
Abstracted from Watts Dic + RTS works
at Myers fla March 1904

Acridine – a base, not oxdzd or altered by KOH
Aniline black – powerful base, insoluable alkalis

Benzamide } see Watts 2nd Sup 80.
Anisaldehyde }

Anthracene Orange. Unacted upon by KOH.

Anthrachrysone Unacted upon by KOH
see Watts 2nd Sup 86.

Abietin not attackd by KOH.

Monochloroacetal, aromatic odour BP 155 C.
Vapor den 5·38 perfectly neutral not
attackd by KOH.

Dichloroacetal BP 180 aromatic.

Gaseous Hydrojodic acid passed into Acrolein forms substance insoluable acids or alkalis Contains Iodine.

Amarine - solid resin not attack'd by fused KOH -

Amarone not decomp'd by alcoholic KOH a resin -

Oil Anise not attacked by strong boiling solution of KOH.

Oil Anise treated with Antimony trichloride gives Anisoin - fuses 100 C. not attacked by boiling KOH.

Anisol, aromatic odor insol KOH BP 152 C

Nitroanisol aromatic heavier than water BP 260 C. insol H_2O. not attacked by boiling KOH.

Azoxybenzine MP 36 C insoluable KOH.

Benzilin MP 130 C Amorphous not attacked by boiling KOH.

Benzoin MP 120 C not attkd boiling KOH.

Benzoline MP 248 C "

Benzostilbin MP 244 C KOH of spec G 1.20 dont attack it.

Betulin a resin from the outer bark of the Birch Tree MP 200 C. not dissolved by KOH

Cajuputene hydroiodate anhydrous cryst not altered by boiling KOH.

Capnomor Oil BP 200 C insol H_2O or KOH

Cumene C_9H_{12} BP 144 C aromatic odor S.G. 0.87 not attacked by fused KOH

Cumo-salicylous anhydride [see Cuminic anhydride] not attacked by fused KOH.

Cyanzthane MP 190C, solid, not attackd KOH

Cymene Oil, SG 0·87 BP 171 C aromatic not attackd by KOH.

Dammara Resin, non acid part, not attackd by KOH.

Ethylenic Oxide with Aldehyde BP 82 SG at O, lent 1·002 not attackd KOH.

Guaiacine BP 118C SG 0·87 not attackd by KOH.

Helenin – solid – insol H_2O MP 72 BP 275 not attackd by KOH either in H_2O or Alcohol.

Heptyl Chloride SG 0·89 BP 160 C aromatic not attackd by boiling KOH 26·6% Chlorine burns smoky flame

Heptylene Chloride, lighter than H_2O
Aromatic, BP 191 C 42% Cl boiled for some time in alcoholic KOH decompd into HCl & another chlorinated compound.

Hydrobenzoin, solid - not attacked by boiling KOH Even alcoholic -

Hydro cinnamide - solid - not attacked by boiling alcoholic KOH -

Icica Resin - one part not soluable in KOH.

Indigo Blue not soluable in KOH.

Iodoform not sol in H_2O acids or KOH decomposed by boiling KOH.

Marrubiin not attacked by KOH.

Melene - (Paraffine of Wax) not attacked by boiling KOH.

Mesitylene BP 155°C aromatic - light oil
not decomposed by KOH aq

Mesitylene trichloride - solid, not decomp.
by even solid KOH.

Metacetone " "

Chloronaphthalene, oil, not attacked by KOH.

Dibromonaphthalene MP 59 - " "

Hexachloronaphthalene, wax, MP 140°C
Can be bent, rosette cryst, unattacked by KOH.

Octyl Alcohol BP 180. SG 0.82 insol H_2O
Chloride ditto + lighter than H_2O SG 0.89
burns smoky green think not affected
by KOH. both aromatic

Onocerin solid - insol H_2O not attacked KOH

Oxynaphthalamine – amorphous powder insol NH_4 or KOH. insol H_2O $C_{10}H_9NO$ its oxdgd Naphthalamine, it combines with either acids or alkalis.

Palmitone, Ketone of Palmitic acid MP 84 not attacked by KOH.

Anthracene, unaltered by alkalis

Oxanthracene solid resin not attacked by KOH aq

Phenol not attacked by KOH. BP 187. floats on water sparingly sol in H_2O.

Ethylic Phenate (Phenetal) BP 172C aromatic not attacked by KOH.

Bromophenyl. MP 164 insol H_2O not attackd even by alcoholic KOH.

Monobromobenzine not attackd by KOH

Ind. Hrwy

Chloride of Phenyl. BP 138 not attkd by KOH

Phenyl-sulphide-proto. BP 292. aromatic SG 1·09 – insol H_2O not attacked by KOH either in water or alcohol.

Tribromophenylamine Cryst MP 117 BP 300. insol H_2O dont dissolve in acids or alkalis KOH has no action at boiling heat

Cyaniline Cryst. MP 210. Neutral, insol H_2O not affected by boiling solution KOH.

Mononitrophenylamine – action of Bromine is to make a resin not affected by KOH.

Pyrrol red. solid, insol in acids or alkalis

Quinoidine a base got in mfg Quinine Resin – not dissolved by alkalis.

Styrylamine a solid base MP 100 insoluable in KOH.

Phenylsuccinamide, cryst, sublimeable, not attacked by KOH.

Sulphobenzide Cryst MP 128 not soluable in KOH.

OxyThymöil - cryst, aromatic, MP 48 insoluable in KOH.

Chlorotoluene BP 157 C SG 1.08 at 14 C not affected by KOH.

Acenaphthene MP 100 BP 284. not attkd KOH

Methyl-acetal SG 0.85 BP 85 slightly sol H_2O not attacked by KOH.

Anishumin, black mass insol KOH. Alcohol, Ether H_2O or ammonia.

Hydranisoin solid - MP 172 not attacked by KOH aq or Alcoholic.

Anthracene Hydride MP 106 - not attacked by KOH.

Dibromoanthracene Cryst MP 221 not attacked by KOH or alcoholic KOH except at 160 C.

Dichloroanthracene MP 205 C. not attacked by KOH aq -

Tetrachloroanthracene MP 220 " "

Anthraquinone MP 273. not oxidized by strong oxidizers not attacked by alcoholic KOH or even fusion with KOH.

Dinitroanthraquinone - Fritzsches Reagent.

Hexachlorobenzine MP 226 BP 331. difficultly attacked by KOH.

Mon-iodobenzine. Liquid. aromatic, BP 185 SG - 1.69 - not decomposed by solid KOH. or KOH aq or Alcoholic.

Sulphobenzide solid, MP 125 not attacked by alcoholic KOH at 180 C in sealed tubes

Dichlorosulphobenzide oil, heavier than water insol therein faint odor like Camphor, distils 300. not attacked by alcoholic KOH or Sodium amalgm

Toluene in alkaline Potassium permanganate gives benzoic acid and a neutral solid aromatic body insol in H_2O or KOH.

Dibromotoluene MP 107 not attacked by alcoholic KOH or Oxdzd by Bichrom + H_2SO_4

Sulphotoluide MP 155 insol H_2O not attacked by alcoholic KOH.

Tolylbisulphide not attackd by KOH.

Dibromoxylene MP 69 unattackd by Alcohol KOH

Mono bromocumine BP 218 SG 1.32 not attacked by Alcoholic KOH

Monobromomesitylene, oily-aromatic, SG 1.31 at 10 C. BP 225 not attacked KOH amalgam at any Temp

Monobromocamphor, aromatic solid MP 76 C not decomp by Alcoholic KOH

Camphor heated for 3 or 4 hours with Alcoholic KOH converted To soft tough yellow resin which becomes perfectly inodorous by prolonged heating to 100 C.

Monobromocetin lighter than Water not attacked by KOH.

Conferin- by boiling in dilute acids, resin formed insoluable in KOH. Watt 1st Sup 489

Duodecyl chloride- from petroleum duodecyl nearly inodorous. BP 246 SG 0.933 Non action KOH

Ethenyl-diamine- insol KOH. 1st Sup 585

Action Sodium Alcohol + alcoholic KOH on Dichlorinated Ethyl oxide Liquid BP 157 C aromatic heavier than water not attacked by boiling KOH aq 1st Sup 597.

Diethylene Bisulphide slightly sol water MP 110 C sublimes at 56 C BP 200 strong not unpleasant odor not attacked alcoholic KOH.

Grahamite, pitchy fossil mineral found in Ritchie Co Va insol KOH, or Alcohol, partially in Benzol. Wholly in CS + Benzol. softens 200 Carbon 76% H 7% O 13% 13% ash

Phono #

Guanidine 1st Sup. 654 see Melaniline insol in acids or alkalis

Pentabromonaphthalene Cryst, not affected by Alcoholic KOH,

Ditto Pentachloronaphthalene

Cyanonaphthalenes 1st Sup. 847
B-Cyanide forms substance like Stearin MP 65 beautiful white mass

Dibromo naphthyl MP 215 not attacked by alcoholic KOH. 1st Supt 855

Tetrachlorohydroquinone 1st sup 988 see under this heading Diethyltetrachlorohydroquinone MP 112 not affected by boiling KOH aq - also - Diacetyl-tetrachloroh—e

Dioxyretistine, red powder not dissolved by KOH aq or oxidized by chromic acid Soluable in Benzol.

Sassafras oil. 1st Sup 1014 — nine tenths passes over on the 1st distillation between 230 + 236 consists of Safrol. $C_{10}H_{10}O_2$ insol water SG 1·114 at 0° remains liquid — 20 C Converted by alcoholic KOH at 180 to black uncrystble resin. Safrol is converted by Phos pentachloride to thick tenacious mass of Monochlorosafrol. same thing produced by one part Safrol + one part bromine. Melted KOH attacks Safrol with difficulty Sassafrass oil is cheap —

Ethyl-thymol 1st Sup 1090. aromatic liquid insol H_2O BP 222 oxidizes slowly in air, KOH dont attack even when heated.

Diacetyl-trichlorotoluhydroquinone — MP 114 — dissolves sparingly in water not attacked KOH aq heated.

Benzamide 2nd Sup 80.
MP 192 Cryst insol H_2O. not affected by KOH.

Rubber

Anthracene Orange 2nd Sup 86.
MP 225 sublimes above this
KOH or nitric acid has no action

Anthrachrysone 2nd Sup 86.
Green powder dont melt even at 320 C
can be distilled with decompstn H_2O only
dissolves traces best solvent glacial
acetic acid, other solvents nq —
not attacked by Sodium amalgam.
Mg salt amorph red precip — Ba salt.
Cryst flaky — fusing Anthrachrysone
with KOH large quantity humus like
substances formed.

Diacetyl-phenanthrene-hydroquinone
2nd Sup 94 — MP 202 not oxdzd by
Sulphuric + Bichromate K not attacked
by heating with KOH SG 1.3 but is
by higher Concentrations —

Azodiphenyl blue — KOH precips the
base from Conc alcoholic solution
mod H_2O.

Rubber

Monochlorobenzine SG 1·12 at 0°
BP 131 not attacked by KOH or K itself at
ord temps

Trichlorobenzine MP 17 BP 206.
strong not unpleasant odor SG 1·57
not attacked by KOH in any form even on
heating

Dibromoazobenzine MP 205 not attacked
by KOH. 2nd Sup 148 Sol Chloroform.
boiling Benzol CS.

Tetrabromoazobenzine MP 320?
not attkd KOH. at MP commences
blacken & decomp.

Benzile tetrachloride MP 153 not
attacked alcoholic KOH.

Benzylene-diacetimide Cryst
decomp 200 slightly sol H_2O not
affected boiling KOH or NaHg

Carbazol 2nd Sup 254 insol water MP 238 boils 338 not decomposed by passing through red hot tube. not decomp by fused KOH. or heating to 200° in Alcoholic KOH.

Chlorohydrins — Watts 2nd Sup 318 Dichlorohydrin heated with alcoholic ammonia yields NHCl + Chlorhydrinimide white, amorphous, insol H_2O Ether or Conc acids not acted on by boiling Sulphuric & Aqua Regia or strong KOH. in hot water it swells up enormously yielding a perfectly trans jelly

Bromocymene 2nd 420 not attkd KOH.

Indigo — Comel purified in KOH lye dissolves out several things leaves pure indigo behind, Contains 25% ash treated with HCl leaves 3% $CaPhO_4$ 2nd Sup 667.

Smell of Naphthalene due to Leucoline oil - which is seperated by boiling in strong sulphuric a + precipitating resulting brown solution with ammonia

Bases

Nitropapaverine a base cryst, not sol in KOH. 2nd Sup 891

BP of paraffines.

Butane	1
Pentane	38
Hexane	70
Heptane	99
Octane	124
Dodecane	202
Hexdecane	278

Acetophenone - a base MP 130 not decomp at red heat by Sodalime or oxdzd by chromic acid -

In experimenting with hydrocarbons Use Picric a + Fritisches Reagent to form salts decomp by KOH or NH4

Rubber

Sulphotoluide 2nd 1125 MP 155
not attacked by Alcoholic KOH at 160 C

Acetanilide-chloride, action heat gives hydrochloride of a base which is precip by KOH to an amorphous base. 3rd sup 3

Azophenin, MP 224-watts 3rd 138
not attacked by KOH.

Dinitrometatribromobenzine MP 187
not attacked by KOH. 3rd 181

Diphenylnitrosamine MP 66 unacted upon by acids or alkalis 3rd 209

See Sulphur 3rd 211 Sulphur in dye
its likely that aniline & other bases precipitated by KOH & not acted on can be further changed by heating with Sulphur

Nitroisopropyl-azobenzine 3rd 214
yellow oil, heavier than water, not volatile
alone or with vapor water quite insol
in alkalis --

Conima or incence resin insoluble KOH aq
or Alcoholic KOH. Amorphous.
3rd 555

Dimethyl-aniline-Phthalein 3rd 650
insol KOH.

Dibromodinaphthylmethane not attacked
by boiling alcoholic KOH 3rd sup 653.

Dibromofluorene MP 167 not attacked
by boiling alcoholic KOH.

Dinitrostilbene — insol KOH + most all
other solvents MP 280 3rd 677

Ditolyl — hydrocarbon easy made
not altered by heating ½ hour
to 500 Cent.° 3rd 691

Ditolyl-Ethane action acetaldehyde on Toluene – aromatic oil, BP 298 C !

A very viscous substance at ordinary temp which has solvent properties on crystlzd substance will render a large quantity amorphous.

Beer glass. Si 75% CaO 5% N_2O 18.6% why if silica is fully satisfied with bases should it be disolved by KOH. possibly FeOH or MgO mixed with silicate soda as binder + fused would be ok as seperators.

Isolepidin 3rd 1176. not affected by Alcoholic KOH. becomes resinous on distillation, ditto Oxyisolepidin

Nitromanitan 3rd 1267 by boiling with alkalis makes it a black gummy non explosive mass

Bromodimethylaniline 3rd 1308.
not altered by boiling KOH aq insol in KOH. Cryst MP 55 BP 247 its a base

Iododimethylaniline, a base acts as above

Nitrosodimethylaniline a base insol KOH MP 92 slightly volatile in a current of steam 3rd 1309.

Dimethylaniline-Phthalein base not sol KOH not attacked at 200 3rd 1310 see reduction products also bases

Nitrosonaphthols 3rd 1363
α- & β bases insol in KOH.

Methyloxysulphobenzide MP 130 not sol KOH. 3rd 1475

Dinitroethyloxysulphobenzide cryst insol KOH. 3rd 1475

2 Bromophenanthrenes not attkd by alcoholic KOH. 3rd 1514

Highchlorinated Phenanthrenes not affected by Alcoholic KOH, 3rd 1515

Phlorobromin MP 152 decomp high temp in sol H_2O not attacked boiling KOH. boiling nitric acid or NaHg – 3rd ~~1570~~ 1570

Pyrroline 3rd 1728 Methyl Ethyl, & Amyl pyrrolines liquids BP 113 131 & 180. not attacked KOH.

Dinitrotoluene treated with Sodium Amalg gives black uncrystalizable mass. 3rd 1994

Orthoditolyldizin not attacked KOH aq MP 55 volatilizes readily with water vapor 3rd 2032.

Tribenzoylene-Benzine 3rd 2041 dont melt at 450 C. not attacked by boiling KOH aq or Bromine.

Vascoluse a variety of cellulose not attacked by KOH. except at 200 C under pressure Kernels of Apricots contain 50% of it –

Phons

Hydroxyacetal, aromatic liquid BP 167
Roscoe & Sc Vol III Pt 2 69—

Aldehyde Ammonia in alcoholic solution changes quickly on heating giving an amorph base called Aldine

Thialdine $C_6H_3NS_2$ R&S No 498 Monacid Base

Glycocyamidine – or Glycolyl-Guanidine
R&S No 516 Base

Creatine, neutral Base

Creatinine Base

Glyoxalin Base

Oxamide (perfectly neutral) white powder

Chloroxalethyline, Base oily, narcotic smell
BP 217 Tertiary base R&S 533

Oxalethyline same as above BP 212

Propylene Oxide + all the hydrocarbon oxides are Bases.

Propylene-diamine Base

Hexpropylene $C_{18}H_{36}$ BP 390 to 400 C ?

Theobromine
Caffein
Methyl-guanimine } Bases
Alkylamines -

Furfurin Base

Sulphonic acids can be heated strongly without decomp. - are not attacked by boiling KOH. & only oxidized by Nitric acid with difficulty

Tetrandromethane C. $(NO_2)_4$ Colorless mobile liquid cryst at 13.C. BP 126 neither explosive or inflammable ? ?

Ethylhydrazine Base destroys Cork + Rubber.

Tetraethyl-tetrazone Base

Triethyl-phosphine extremely stable body not attacked by Nitric or KOH. MP 44 BP 240

Triacetamide – perfectly neutral.

Propylpseudonitril solid insol H_2O acids or alkalis –

Isopropyl phosphinic acid solid paraffine like mass xo 364 R+S MP 60 to 70

Tertiary Nitrobutane aromatic liquid BP 110 to 130 neutral not attacked by Br or KOH. $(CH_3)_3 C.NO_2$ –

Hexachlorobenzine MP 226 ins of water not attacked KOH. or boiling conc acids

Anilin Bases.

Chlorinated Anilin bases.

Metanitraniline MP 114 BP 285 sublimes
not attacked by boiling KOH.

Amidodiphenylamine Base of
Tropaeolin OO Comel.

Sulphones have neither basic or acid qualities

Mauveine, a base of an aniline dye.
very powerful base.

Safranine, an aniline dye. has a powerful
base in it unaffected by KOH. sometimes
called Tolusafranine. The base is a
hydroxide - it can be reduced oxidized
possibly replace N_2OH. in Bat. RTS No 1091
Salts of Safranine <u>not</u> decomp by KOH ?

[ITEM FOUND IN BOOK]

No 5 no foaming
12 terrible foaming
with only few drops in good No 1
froths 2 inches
3 drops will froth at 2" or more
in first 3 minutes there is no humps
as it disappears on 4 humps when
electrodes are only in 1/4 inch

No 19 No foaming
18 No foaming
4 No foaming
11 foams very bad but not so bad
as No 12 albumen comes up
much only more with 50 drops
in 100 cc

No 1 1/8" bad foaming with strong bad